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Findings from a nationally representative study

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Abstract

Adolescent gang membership has been proposed as a risk factor that creates individual-level vulnerability for domestic minor sex trafficking (DMST) and/or a context in which DMST may occur. This study investigates the gang membership-DMST association using data from The National Longitudinal Study of Adolescent to Adult Health, a nationally representative sample of adolescents in the United States (*n=12,605*). Bivariate results found gang-involved minors had 4.39 greater odds of experiencing DMST compared to non-gang-involved peers. Multivariable results found gang membership, violence victimization, delinquency, and certain demographic characteristics to be significantly associated with DMST. These findings emphasize the need to consider the context in an adolescent's life beyond DMST when designing policies and programs, and highlight the need for additional research into the gang membership-DMST association.

Keywords: exploitation, sex exchange, adolescence, violence

Background/Introduction

Sex trafficking of minors in the United States (U.S.) is referred to as domestic minor sex trafficking (DMST) and is defined as any minor (under age 18) who is a U.S. citizen or legal resident involved in a commercial sex act (Greenbaum, 2014; Kotrla, 2010). The context of the minor's involvement in commercial sex is irrelevant because, unlike situations involving the sex trafficking of an adult, DMST does not require the presence of force, fraud, or coercion, as minors cannot legally consent to be involved in commercial sex exchanges (Greenbaum, 2014; Kotrla, 2010; Victims of Trafficking and Violence Protection Act, 2000).

Due to the hidden nature of DMST and barriers to sampling victims and/or survivors of DMST, it is difficult to estimate the prevalence of DMST or size of the population experiencing DMST (Franchino-Olsen et al., 2020; Stransky & Finkelhor, 2012). At present, there are no scientifically credible prevalence or count estimates for DMST, and recent publications have cautioned against continuing to cite existing and flawed statistics (Franchino-Olsen et al., 2020; National Academies of Sciences, Engineering, and Medicine, 2020). DMST is known to occur across the U.S. and not to be isolated to a particular setting (rural, urban), region, gender, or racial/ethnic group. The anti-trafficking field is working to apply emerging methodologies to generate improved and more precise estimates of human trafficking, including estimates of DMST (National Academies of Sciences, Engineering, and Medicine, 2020).

In an effort to understand who is at high risk for DMST exploitation and situations that may increase the occurrence of DMST, numerous studies have investigated risk factors enhancing vulnerability for DMST (Choi, 2015; Franchino-Olsen, 2019b; IOM & NRC, 2013). Commonly cited risk factors for DMST include: abuse or maltreatment in childhood (Footer et al., 2020; Gibbs, Henninger, Tueller, & Kluckman, 2018; Kenny, Helpingstine, Long, & Harrington, 2020; Laird, Klettke, Hall, Clancy, & Hallford, 2020; J. Reid, 2010; J. A. Reid, Baglivio, Piquero, Greenwald, & Epps, 2017; Tyler, Gervais, & Davidson, 2013), adolescent sexual assault (de Vries et al., 2019; Fedina, Williamson, & Perdue, 2019; Hogan & Roe-Sepowitz, 2020; J. A. Reid, 2014; J. A. Reid & Piquero, 2014), involvement in child welfare systems and/or placement in out-of-home care or foster care (Gibbs et al., 2018), adolescent substance use (Edwards, Iritani, & Hallfors, 2006; Laird et al., 2020; McNeal, 2020; J. A. Reid & Piquero, 2014; Ulloa, Salazar, & Monjaras, 2016), running away from home (Edwards et al., 2006; Gibbs et al., 2018; Kaestle, 2012; Laird et al., 2020; J. Reid, 2010; Ulloa et al., 2016), and

homelessness (Boyer et al., 2017; Kaestle, 2012; Laird et al., 2020).Though there is not a single, clear theory or model explaining how these risk factors create DMST vulnerability for minors, researchers typically consider these to be factors that stem from or result in marginalization or social isolation of an individual (Franchino-Olsen, 2019a; IOM & NRC, 2013). Such marginalization means minors are less connected to protective factors, resources, or social supports and may cause these young people to inhabit environments in which exploitation can more easily occur (Franchino-Olsen, 2019a; IOM & NRC, 2013).

Various frameworks and lenses have been used to organize or contextualize risk factors for DMST, including the social-ecological model and the life-course perspective. The social-ecological model arranges the risk factors for DMST across framework levels (individual, relationship/interpersonal, community, societal) and allows for contextualization of the risk factors in a larger system of vulnerabilities (Franchino-Olsen, 2019a; IOM & NRC, 2013). The life-course perspective is helpful in considering how events across a minor's life may create contexts in which marginalization occurs or vulnerabilities for DMST are exploited (Cobbina & Oselin, 2011; Fedina et al., 2019; J. A. Reid & Piquero, 2016; Todres & Clayton, 2014). For instance, factors that create a difficult childhood—including abuse or maltreatment—may lead to instability in adolescence—e.g., substance use, running away—which act to marginalize an individual, decreasing their social capital and connectedness and/or which create contexts/circumstances that result in DMST experiences (Cobbina & Oselin, 2011; Fedina et al., 2019; IOM & NRC, 2013; J. A. Reid & Piquero, 2016).

Membership or involvement in gangs and social ties to gangs have also been proposed as risk factors that create vulnerabilities to DMST and create a context in which DMST may occur (IOM & NRC, 2013). In general, youth involved in gangs experience significantly more violence

victimization than their peers who are not in gangs; these heightened victimizations seem often to precede their gang membership (e.g., violence or abuse at home), happen while they are involved in a gang—as gangs are "havens for violence", both perpetration and victimization—and follow them after they have left the gang (DeLisi, Barnes, Beaver, & Gibson, 2009, p809). Gangs have been considered a community-level DMST risk factor wherein gangs in a neighborhood indicate community norms around crime and may reflect neighborhood environments in which DMST is more easily facilitated (IOM & NRC, 2013; Miller-Perrin & Wurtele, 2017). Additionally, a minor's gang membership has been linked with their individual-level risk for DMST (Greenbaum, 2014). Additionally, youth who are homeless or who have run away from home—commonly cited risk factors for DMST—are at high risk for joining gangs and experiencing violence due to their gang membership (Unger et al., 1998).

A multi-year study from the United Kingdom found that significant levels of sexual victimization and exploitation occur in gangs and that these victimizations are often connected to wider forms of violence experienced by young people (adolescents, young adults; Beckett, H., Brodie, I., Factor, F., Melrose, M., Pearce, J., Pitts, J., Shuker, L., & Warrington, 2013). The exploitation assessed by Beckett and colleagues included sex exchanged for money, drugs/alcohol, to discharge a debt, or some other item of commercial value, which fits the definition of DMST in the U.S. (2013). Miller-Perrin and Wurtele noted that girls may experience DMST via gang membership as part of initiation rituals or in order for other members to gain power and/or wealth (2017). In studies in the U.S., Twis and colleagues found that some girls who experienced DMST were trafficked by their romantic partner who was also a gang member and that this gang membership impacted the fear victims/survivors felt towards their trafficker (Twis, Gillespie, & Greenwood, 2020). This romantic partner/trafficker analysis found

that DMST victims/survivors were not involved with gangs prior to their connection to their partner/trafficker, but, once they began experiencing DMST, the gang acted as an additional system of control and abuse beyond their relationship with their partner/trafficker (Twis et al., 2020). Taken together, these findings provide some idea of how gangs and DMST may be linked in the lives of adolescents.

To our knowledge, no empirical work investigated the connection between DMST and gang membership among a population-based sample of both male and female adolescents in the U.S. The lack of empirical evidence around this potential DMST-gang membership connection limits the scope of prevention and intervention efforts. Most studies examining the risk factors or correlates of DMST focus on covariates that are situated in the individual or relationship level of the social-ecological model, while little work has examined the community-level contexts, such as gang membership, that may intersect with DMST experiences. This is a notable gap in the field, as environmental factors seem critical in predicting and understanding DMST victimizations (Twis et al., 2020). Additionally, DMST research too often assumes that the vast majority of DMST victims/survivors are females with much of the research over the past two decades using samples or frameworks designed to represent cisgender females (Robert & Willis, 2013). Likewise, many of the studies connecting DMST to gang membership explicitly stated that females seemed to be the ones at risk for exploitation and/or that females were offered low-tier membership into the gang in order to be exploited via DMST (Beckett, H., Brodie, I., Factor, F., Melrose, M., Pearce, J., Pitts, J., Shuker, L., & Warrington, 2013; Mapp, 2016; Twis et al., 2020). Few studies have included a large sample of males reporting DMST experiences, though previous work has noted that more males report DMST victimization than previously assumed, and that many of those males identify as being a gender or sexual minority (LGBTQ+) (Dank,

M.; Yahner, Jennifer; Madden, K.; Banuelos, I.; Yu, L.; Ritchie, A.; Mora, M.; Conner, 2015; Robert & Willis, 2013; Schwarz & Britton, 2015).

Current study

This study used data from a large, population-based, longitudinal study based in the U.S to examine whether adolescent minors who reported gang membership are more (or less) likely than their non-gang-involved peers to experience DMST. The study's research questions were:

1) Are adolescents who report joining a gang more (or less) likely to report DMST experiences?

2) Does biological sex modify the potential relationship between DMST experiences and gang membership?

3) How is the potential association between gang membership and DMST affected when additional forms of adolescent violence (victimization and perpetration), neighborhood contexts, and demographic covariates are accounted for?

Methods

Sample

The study analyzed data from the National Longitudinal Study of Adolescent to Adult Health (Add Health). Add Health is a large, nationally-representative, longitudinal study of more than 20,000 in-school adolescents in the United States who were in 7th–12th grade (approximately ages 12–18) in 1994–1995 (Wave I) (Harris et al., 2009). Wave II, which was completed approximately one year later, included 14,738 of the original respondents who were aged 12–22 in 1996. Wave II interviews were not conducted with individuals who were high school seniors (12^{th} grade) in Wave I unless they were part of the genetic sample. The analysis data set was comprised of information from the first two waves of Add Health, meaning the

Waves I and II in-home interviews with the adolescents. This project included respondents aged 18 years or younger at Wave II with non-zero sampling weights, who were included in the Wave I and Wave II samples, and who had complete information available on the demographic variables of race/ethnicity, family structure, and age at Wave II (*n=12,605*).

Add Health has previously been used to investigate experiences of DMST or commercial sex/sex exchange for minors or young adults (Edwards et al., 2006; Kaestle, 2012; Ulloa et al., 2016). Add Health has also been used to investigate adolescents associated with gangs and found levels of adolescent gang involvement to be similar to other samples, despite Add Health including only school-enrolled youth (Bell, 2009; DeLisi et al., 2009).

The age of the Wave I and Wave II data used in this analysis warrants a mention. As the measures of minor sex exchange (operationalized to represent DMST) were collected over two decades ago, there is a possibility that they do not accurately reflect the population of minors currently experiencing sexual exploitation. However, minors may remain as inadequately protected from abuse and exploitation currently as they were in the mid-1990s when these adolescent measures were collected, particularly as many of the factors that lead to marginalization and create trafficking vulnerability (e.g., racism, poverty, child abuse and maltreatment) remain relevant social concerns. It is encouraging that findings from Add Health studies examining the risk and protective factors for and the outcomes stemming from minor sex exchange are similar to results from DMST samples collected more recently (Edwards et al., 2006; Fedina et al., 2019; Franchino-Olsen, 2019b; Havlicek, Huston, Boughton, & Zhang, 2016; Kaestle, 2012; Le et al., 2018; Ulloa et al., 2016). Thus, despite the age of the Add Health sample, it seems reasonable to conclude that analysis of the dataset remains relevant for current work to prevent trafficking and violence in adolescence and young adulthood.

Notwithstanding its age, the structure of Add Health makes it valuable to issues involving hard-to-reach populations, including gang members and minors who exchange sex. As a population-based survey, the findings are potentially more generalizable to the experiences of school-enrolled adolescents in the United States than many samples which examine high-risk DMST populations (e.g., homeless minors). Previous analysis of the Add Health data determined that estimates from the data are not biased in light of the inherent exclusion of high school dropouts in the school-based survey when creating nationally-representative estimates for adolescents at the time of survey collection (J. Richard Udry & Chantala, 2003). Critically, two of the measures included in the sensitivity analysis were the Add Health questions about trading sex for money or drugs (which qualifies as DMST for minor respondents) and witnessing or experiencing adolescent violence (J. Richard Udry & Chantala, 2003). These findings are key, as previous work has noted that many identified and confirmed DMST survivors are no longer enrolled in school (Cole, Sprang, Lee, & Cohen, 2016). While Add Health respondents may not perfectly represent all DMST survivors given the sampling frame and measures used in the survey, it is meaningful that the estimates produced from these data should not be unduly biased for the population of interest.

The exclusion of boys from many of the narratives around the experiences and consequences of DMST victimization presents a serious gap in the literature that can be aided by Add Health data. Investigation into the reported experiences of DMST by Add Health participants, over half of which are boys, can help root out some of the myths around the roles of males in DMST which rarely presents them as victims or survivors of exploitation (Edwards et al., 2006; Robert & Willis, 2013). The inclusion of minor males in the study meets a specific

recommendation to improve this field by conducting research on the impact of sexual exploitation on boys and young men (Robert & Willis, 2013).

Measures

Domestic minor sex trafficking (DMST):

DMST was evaluated by asking respondents about their experiences of "giving someone sex in exchange for drugs or money," an act that qualifies as DMST if the exchange happened when the respondent was a minor (Choi, 2015). (However, it should be noted that DMST reflects all forms of minors' involvement in commercial sexual exchanges. The available measures for this analysis represent only commercial sex exchanges involving money or drugs and excludes other items of commercial value that may be exchanged for a minor's participation in commercial sex.) Respondents at Wave I were asked if they had ever experienced giving someone sex in exchange for payment (as described), and, at Wave II, they were asked about these experiences between Waves I and II. (Respondents were asked: "Have you ever given someone sex in exchange for drugs or money?" or "Since [the last interview], how many times have you given someone sex in exchange for drugs or money?") Thus, when taken together, the Wave I and Wave II responses are a measure of DMST events prior to the Wave II interview. Responses were coded to reflect whether the respondent had ever exchanged sex for money or drugs in their lifetime (0/1) (before the Wave I interview and/or between the time of the Wave I and II interviews).

Gang membership:

At Wave II, respondents were asked whether they had ever been initiated into a named gang. Those who responded yes were coded as experiencing gang membership in their lifetime (0/1).

Adolescent violence:

Adolescent violence victimization. Violence victimization was assessed at Waves I and II by asking respondents whether in the past 12 months someone pulled a knife or gun on them, jumped them, or shot, stabbed, or cut them. Respondents who answered yes to any of these questions were coded as having experienced adolescent violence victimization (0/1).

Adolescent violence perpetration: Violence perpetration was assessed at Wave I and Wave II by asking about violence perpetrated in the previous 12 months. If the adolescent had threatened someone with a knife or gun or had shot or stabbed someone or ever brought a weapon to school, they will be considered to have perpetrated violence in adolescence (0/1).

Adolescent delinquency:

Adolescent delinquency was assessed at Waves I and II through a series of 15 questions about the adolescent's history of delinquent behaviors (such as painting graffiti, causing property damage, stealing, selling drugs, etc.). As informed by previous Add Health studies, responses were considered collectively to provide each respondent with a score from 0–15 to reflect how many of these delinquent behaviors they engaged in as reported at either Wave I and/or Wave II (DeLisi et al., 2009).

Demographic variables:

Biological sex. For analysis purposes, biological sex was measured at Wave II when respondents were coded as either male or female based on school records and confirmation from the interviewer.

Race/Ethnicity. Race and ethnicity measures were generated as a constructed variable from multiple interview questions and provided by Add Health researchers (J.R. Udry, Li, & Hendrickson-Smith, 2003). This was included as a categorical variable with four options: Non-

Hispanic White (1), Non-Hispanic Black (2), Hispanic (3), Other (4).

Age. Age at Wave II interview was measured as a continuous variable.

Highest parental education. Highest parental education was used as a proxy variable for socio-economic status (SES), as recommended by other Add Health researchers (Kahn & Halpern, 2018). The variable was drawn from multiple interview questions and included as a categorical variable with 4 options: no high school degree (1), high school graduate (2), some college attended (3), and college graduate or beyond (4).

Family structure. Family structure reflected the type of family the respondent primarily resided with and was used as a categorical variable with four options: two biological parents (1), two parents (at least one of whom is non-biological) (2), single mother (3), single father (4), and other (5).

Neighborhood context:

To account for the environment in which the adolescent lived, variables reflecting the neighborhood context were included, as informed by previous Add Health studies (Bell, 2009; DeLisi et al., 2009).

Neighborhood poverty. Neighborhood poverty reflected the proportion of persons at Wave I with an income below 1989 poverty level in the census block in which the adolescent resided. Neighborhood poverty was coded as a continuous variable with a range of values from 0.000 to 0.864.

Total crime. The total crime rate (per 100,000 population) in the adolescent's county of residence at Wave I was included as a continuous variable (0 to 16,855) and provided by Add Health via the Uniform Crime Reports (Bell, 2009; U.S. Dept. Of Justice Federal Bureau of Investigation, 1994).

Analyses

Descriptive statistics for the key variables of interest were conducted for the whole analysis sample and separately for males and females. Bivariate logistic regression was used to estimate the association between DMST and gang membership for the full sample and for sex-specific samples of males and females (Questions 1 and 2).

A multivariable logistic regression model was used to estimate the association between gang membership and DMST (dependent variable). The model included data from the entire sample of males and females. More specifically, DMST (yes or no) was modeled as a function of gang membership, adolescent violence (victimization and perpetration), adolescent delinquency, demographic variables (biological sex, race/ethnicity, age, parental education, and family structure), and neighborhood context (poverty and total crime). To assess differences in associations by biological sex between DMST and gang membership, as well as adolescent violence and delinquency variables, interaction terms were created between biological sex and each independent non-demographic or non-neighborhood variable (Questions 2 and 3).

The eligible analysis sample had a moderate amount of item nonresponse among the project's variables (10.6% of sample missing response on one or more variables of interest). To account for this missing data, we used multiple imputation by chained equations (MICE). Data underwent 100 imputations (m=100) with predictors drawn from the demographic variables (biological sex, age, race, family structure) in the imputation. Imputed data was accounted for in analyses, as were Wave II sampling weights and Add Health's complex survey design (including stratification and clustering). Analyses were conducted using Stata 16.1 (StataCorp, 2020).

Results

The eligible Add Health sample size included 12,605 respondents (n_{male}*=6,071;*

$n_{female}=6,534$). Of these eligible respondents, approximately 90% had no missing data for all included variables of interest ($n_{complete\ case}=11,502$). The data for the remaining 10% who were eligible, but missing responses on at least one variable of interest ($n_{partially\ complete}=1,103$), underwent multiple imputation by chained equations (MICE; m=100) to restore the analysis sample to the full, eligible size of 12,605 respondents.

Demographic and Neighborhood Characteristics

Table 1 presents the demographic characteristics and neighborhood characteristics for the full sample and by biological sex (males, females). The full sample had approximately similar proportions of male (49.68%) and female (50.32%) respondents. The majority of respondents identified as non-Hispanic White (65.91%), with the remaining respondents identifying as non-Hispanic Black (15.33%), Hispanic (11.94%), or another race/ethnicity (6.82% as "Other"). The average age of the sample at Wave II was 15.76 years. Nearly one-third of the sample had parents who had completed college (31.01%), while 29.96% had parents who attended some college or vocational education, 26.94% had parents who had completed high school, and 12.09% had parents with less than a high school education. The majority of respondents lived with two biological parents (55.03%), with the remaining respondents primarily residing in a family structure with two parents, at least one of whom was non-biological (17.15%), a single mother (20.79%), a single father (2.99%), or some other family structure (4.04%). In considering the neighborhood context in which respondents lived, the average neighborhood had 14.49% of persons living in poverty and a total crime rate of 5,595 per 100,000 persons.

Characteristics of Adolescent DMST Experiences, Gang Membership, Adolescent Violence, and Delinquency

The percentages of respondents reporting DMST experiences, gang membership, adolescent violence, and adolescent delinquency are included in Table 2. All of these estimates were found to be significantly different for the males compared to the females in the sample, so sex-specific findings are also included. In the full sample, 3.55% of all respondents reported ever exchanging sex as a minor, and significantly more males (4.85%) reported at least one of these DMST experiences compared to females (2.26%). With respective to their history of gang membership and adolescent violence, 4.66% of respondents reported ever being initiated into a gang (males: 6.54%; females: 2.80%), 25.45% reported experiences of violence victimization in the previous 12 months (males: 35.19%; females: 15.83%), and 13.51% reported perpetrating violence in the previous 12 months (males: 20.15%; females: 6.94%). The average score for adolescent delinquency was 3.73 for the full sample and was approximately one point higher for males (4.25) than females (3.22).

DMST Experiences and Gang Membership

Table 3 presents the bivariate proportions and odds ratios for ever having exchanged sex as a minor (DMST) among respondents who were and were not members of a gang. For the full sample and the sex-specific findings, a greater percentage of respondents who reported gang membership also reported experiences of DMST. In the full sample, 12.38% of the respondents who reported gang membership also reported DMST compared to the 3.11% reporting DMST who were not previously initiated into a gang. This bivariate relationship is also reported as a significant odds ratio with those who were gang members having 4.39 the odds of DMST compared to their peers who did not report gang membership (95% CI: 3.01–6.39). Similar bivariate relationships were found for males (OR: 3.59; 95% CI: 2.35–5.49) and females (OR: 4.89; 95% CI: 2.37–10.07); however, these sex-specific bivariate estimates were not significantly

different for male and females, meaning there was no evidence that the increased bivariate odds ratio for females of 4.89 was significantly higher than the bivariate odds ratio for males of 3.59.

Table 4 presents the results of the multivariable logistic regression investigating the association between DMST and gang membership while also controlling for adolescent violence, adolescent delinquency, demographic variables, and neighborhood context. Preliminary models examined whether biological sex modified the relationship between DMST and the independent variables of the multivariable model. Biological sex only significantly modified (α=0.05) the relationship between adolescent violence victimization and odds of DMST. Therefore, stratified results for males and females are presented for adolescent violence victimization in the multivariable model while all other estimates present the odds ratios for the full sample.

Results via adjusted odds ratios show that gang membership was significantly associated with DMST (OR: 1.84; 95% CI: 1.16–2.91). For females, violence victimization was significantly associated with DMST (OR: 2.54; 95% CI: 1.35–4.79), but the relationship was non-significant for males (OR: 1.21; 95% CI: 0.83–1.77). Violence perpetration in adolescence was also not significantly associated with DMST (OR: 1.30; 95% CI: 0.89–1.90). Adolescent delinquency was significantly associated with DMST with each unit increase in delinquency score increasing the odds of DMST by 1.12 (95% CI: 1.07–1.17). Females had significantly lower odds of experiencing DMST (OR: 0.44; 95% CI: 0.31–0.62), while non-Hispanic Black respondents had significantly higher odds of DMST (OR: 1.59; 95% CI: 1.15–2.21). The variable for highest parental education of the respondents (a proxy measure for SES) demonstrated that all parental education levels below college graduate had significantly increased odds of the respondent experiencing DMST (Less than high school— OR: 2.35; 95% CI: 1.44–3.84; High school graduate— OR: 2.39; 95% CI: 1.63–3.52; Some college— OR: 1.87;

95% CI: 1.30–2.69). Two parent family structure—at least one of which was a non-biological parent—had significantly decreased odds of DMST compared to the two biological parent family structure (OR: 0.67; 95% CI: 0.47–0.95).

Discussion

This study found a statistically significant association between DMST and gang membership in adolescence. Adolescents who reported having joined a gang had increased odds of also reporting DMST experiences in both the bivariate and multivariable models. However, the DMST-gang membership association was not modified by biological sex in either the bivariate or multivariable models, meaning the associations between DMST and gang membership were not significantly different for males and females. The bivariate model found that adolescents who reported gang membership had an approximate 4-fold increase in the odds of experiencing DMST, compared to their peers not in gangs. The odds of DMST resulting from gang membership were attenuated in the multivariable model (an approximate 2-fold increase in the odds of experiencing DMST for gang-involved adolescents) when accounting for additional forms of adolescent violence (victimization and perpetration), delinquency, demographics, and neighborhood context.

This is the first study of which we are aware that provides empirical evidence for the association between DMST and gang membership among a population-based sample of U.S. adolescents. Despite being the first empirical contribution on this topic, these findings build on the evidence and themes of other work investigating DMST and sexual exploitation within the context of gangs. Similar to the findings of Twis and colleagues, the present study emphasizes that gang involvement is a critical environmental context that should be asked about when screening for or responding to DMST (2020). As DMST is not an isolated experience of violence

nor an singular experience in an environment of adolescent delinquency or criminality, findings highlight the need to consider the context in which DMST occurs in order to best prevent and respond to these experiences (Franchino-Olsen et al., 2021; Twis et al., 2020).

The social-ecological model and the life-course perspective both offer valuable frameworks through which to consider these contexts. The social-ecological model highlights how gang membership and DMST experiences sit within a larger system of vulnerabilities and across social levels. Findings from the present study point to the relevance of the relationship/interpersonal level and the community level. As belonging to a gang is inherently built on the interpersonal relationships between gang members, gang membership may be considered an interpersonal factor tied to DMST experiences. Community environments and norms also influence whether an individual joins a gang and are relevant in seeking to contextualize experiences of DMST and present findings (DeLisi et al., 2009). The life-course perspective provides a lens for examining the cumulative, longitudinal collection of factors across a minor's life. This perspective allows consideration for how gang membership may connect to other DMST-associated factors from childhood and adolescence. Instability in childhood, including abuse and maltreatment, strained parenting, and violence in the community, has been linked to subsequent gang membership and fits into proposed life course trajectories that create vulnerabilities for DMST (Beckett, H., Brodie, I., Factor, F., Melrose, M., Pearce, J., Pitts, J., Shuker, L., & Warrington, 2013; DeLisi et al., 2009; Mapp, 2016). Conversely, the life-course perspective can frame DMST as an experience that precedes membership in a gang, as individuals who experience DMST may have interpersonal relationships or spend time in environments which later lead to joining a gang (Beckett, H., Brodie, I., Factor, F., Melrose, M., Pearce, J., Pitts, J., Shuker, L., & Warrington, 2013).

This study found that biological sex did not modify the association between DMST experiences and gang membership. This adds to this consideration of the DMST context, as males and females have potentially similar experiences or risks when DMST and/or gang membership occur in an adolescent's life course. Similarly, the multivariable model results are in line with previous work that has found poverty or socioeconomic status (measured in the present study via parental education) and race (or, rather, racism and racial inequalities) to be relevant factors which impact DMST vulnerability (Choi, 2015; Franchino-Olsen, 2019b; IOM & NRC, 2013). Adolescent delinquency has been linked to increased likelihood of gang membership (DeLisi et al., 2009) and certain forms of adolescent violence victimization were found to be significantly associated with DMST (Franchino-Olsen et al., 2021). Together, present findings expand on previous DMST work to reinforce the importance of considering context and seeking a wholistic view of DMST prevention and response by illuminating the array of variables—from poverty to delinquent behaviors to gang membership—tied to DMST experiences. This contextualization of DMST is critical to properly prevent, identify, and/or respond to experiences of minor sex trafficking, as demonstrated by Beckett and colleagues when addressing sexual exploitation of youth in England: when providers had an increased understanding of the behaviors and associations linked to DMST or CSEC (including gang membership), they were better able to identify victims/survivors of exploitation (Beckett, Firmin, Hynes, & Pearce, 2014).

Identifying connections between gang membership and DMST experiences adds to the evidence regarding the need to move away from the idea and/or myth of a perfect victim (Diane, Litam, & Lam, 2020). The myth of a "perfect victim" occurs when victims/survivors who do not meet the anticipated criteria of a perfect victim and/or who do not fit into a neatly constructed

narrative of victimization; those who fail to appear as a "perfect victim" are less likely to be identified as victims/survivors of exploitation and more likely to be viewed as criminals (Diane et al., 2020). Adolescents who are members of a gang are perhaps less likely to fit a preconception of a "perfect victim" and more likely to be seen as criminals rather than survivors of DMST. These findings highlight the need to expand the conception of the vulnerabilities or covariates for victimization and to reconfigure perceptions away from the idea of a "typical" victim/survivor of DMST. This gap between how a minor may present and the assumptions tied to the "perfect victim" may be even greater for male gang members than female gang members—though the present study cannot detect a distinction in the DMST-gang association by biological sex—or for adolescents with multiple delinquent behaviors. This further emphasizes the need to assertively move beyond assumptions regarding victims/survivors and to focus on creating broader and more inclusive anti-trafficking efforts for these minor populations. Such efforts to widen the scope of DMST prevention, screening, identification, and response will ensure relevant contextual factors around DMST experiences are properly integrated into efforts in a trauma-informed, survivor-centered manner (Beckett et al., 2014).

Strengths and limitations

A key strength of this study was the use of a large, population-based sample of adolescents from the U.S. to assess the sensitive and difficult to measure topics of violence, delinquency, and DMST. The Add Health design and sampling measures created a probability-based sample, which expands the generalizability of the findings for U.S. adolescents. Add Health interviewed school-enrolled adolescents, who may be considered at lower risk for DMST and/or gang membership than other samples of adolescents (e.g., homeless or runaway minors; adolescents who have dropped out of school). However, the inclusion of school-enrolled

respondents also created the potential to survey minors who have experienced DMST or joined a gang but who are overlooked in studies sampling minors considered at higher risk, adding potential nuance to this study's findings. It is notable that the prevalence of gang membership detected in the Add Health sample is similar to the prevalence captured in other national studies (Bell, 2009).

Some characteristics of the Add Health survey contribute to the limitations of this study. Wave I and Wave II surveys in Add Health were collected from 1994 to 1996, which raises the question of whether the correlates associated with minor sex trafficking have shifted drastically in the past 25 years. As there remain few protections for many of the vulnerabilities that seem to lead to a minor's involvement in commercial sex (including poverty, racism, child abuse, etc.), it seems reasonable that the supposed connections between the adolescent environment, gang membership, and minor sex trafficking have remained the same in the intervening decades and that these findings are relevant for anti-trafficking policies, practices, and awareness. The questions assessing DMST experiences excludes other commercial exchanges—beyond sex exchanges for money or drugs, such as food, shelter, gifts—that would qualify as DMST. A broader question for this measure may have detected additional respondents with a history of DMST. Additionally, the Add Health survey does not provide any questions about the context of the DMST experience. It is not possible to determine if the individuals engaged in DMST to meet basic needs, due to coercion by a third-party, to meet a physiological need for drugs, or as a matter of choice given available economic options. This context would expand our understanding of how DMST experiences link to gang membership, and future work should seek to investigate these complexities. Additionally, given the phrasing of the questions asked respondents for the DMST measures (*Have you ever given someone sex in exchange for drugs or*

money?), it is possible that some respondents answered affirmatively when they actually meant they had purchased sex. How many respondents answered in this unintended way and how many did not affirmatively answer despite a history of DMST experiences due to stigma or shame is unclear. The study is also limited because minors not enrolled in school—but perhaps at even greater risk of DMST—are not included in Add Health (Wolfe, D. S., Greeson, J. K. P., Wasch, S., & Treglia, 2018). Finally, the survey waves of Add Health used in this study do not offer any nuance around gender beyond binary biological sex, meaning gender identities that seem to experience a disproportionate risk of DMST—such as transgender, gender non-conforming, and gender non-binary—could not be detected in this sample (Choi, 2015; Fedina et al., 2019; IOM & NRC, 2013). More attention needs to be given in DMST research to cisgender males or other gender minorities (including transgender, gender non-conforming, or gender non-binary), including investigations into gang membership and DMST links (Robert & Willis, 2013).

Implications

As this is first study to empirically examine the links between DMST experiences and gang membership using a population-based sample, more research needs to be conducted to better understand these associations. Despite the need for future work, there are a number of practical, clinical, and policy implications from this study. It is essential that individuals who work with minor populations—including teachers, healthcare workers, social workers, law enforcement, etc.—are trained on these and other findings which shatter the concept of the "perfect" or "typical" DMST victim/survivor. These trainings should aim to ensure those working with minor populations understand the complexities and contexts that may be surrounding exploitation experiences. Relatedly, education efforts (whether aimed at prevention and/or awareness of DMST) should include materials that explore the varied contexts in which

DMST may occur or with which DMST is associated, including the connection to gangs, to impart a nuanced understanding of DMST to those receiving the educational content. DMST outreach or response efforts should be designed to reach gang-involved adolescents and be sensitive to and inclusive of those minors. It may be valuable to expand clinical screening questions to include gang membership, as minors may be more willing to disclose or more able to articulate their membership in a gang rather than their experiences of exploitation. Gang-related disclosures could then be followed up with specific or in-depth screening for a history of DMST, beyond what is typically administered to minors without a history of gang membership or of other DMST vulnerabilities. Law enforcement should also screen for DMST among individuals who are or suspected to be gang-involved, and minors identified as victims/survivors of DMST should then be connected with relevant, trauma-informed services. Finally, there is a need for DMST prevention policies that target gang-involved minors or minors considered high risk for gang involvement in order to properly reach and respond to these populations with greater sensitivity and precision.

Conclusion

This paper provides the first empirical evidence for the connection between DMST and gang membership using a population-based sample of adolescents. Minors who have joined a gang have elevated odds of also having experienced DMST, even when controlling for violence victimization and perpetration, delinquency, demographic characteristics, and neighborhood environment. The findings emphasize the need to consider the context in an adolescent's life beyond DMST, which may include delinquency and gang membership, when designing prevention and intervention policies and programs. More work needs to be done to understand the complex relationship between minors of all genders and their experiences with DMST and

gangs.

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TABLE 1—Descriptive Statistics for Demographics and Neighborhood Context

		All (*n=12605*)	Males (*n=6071*)	Females (*n=6534*)
		% (SE)	**% (SE)**	**% (SE)**
Demographics				
Race/Ethnicity				
	Hispanic	11.94 (1.59)	12.00 (1.64)	11.88 (1.64)
	Non-Hispanic White	65.91 (2.80)	65.67 (2.85)	66.14 (2.87)
	Non-Hispanic Black	15.33 (2.02)	14.84 (2.02)	15.81 (2.08)
	Other	6.82 (0.77)	7.48 (0.91)	6.17 (0.75)
Age (Wave II)	*Mean (SE)*	15.76 (0.10)	15.80 * (0.10)	15.71 * (0.11)
Highest parental education (SES)				
	Less than high school graduation	12.09 (1.27)	12.01 (1.38)	12.17 (1.28)
	High school graduate/GED	26.94 (1.12)	25.60 (1.25)	28.26 (1.26)
	Some college or Vocational education	29.96 (0.90)	31.07 (1.08)	28.87 (1.00)
	College graduate or beyond	31.01 (1.79)	31.32 (1.89)	30.69 (1.85)
Family structure				
	Two biological parents	55.03 (1.32)	55.23 (1.52)	54.84 (1.38)
	Two parents	17.15 (0.49)	17.59 (0.63)	16.71 (0.64)
	Single mother	20.79 (1.11)	19.53 * (1.23)	22.03 * (1.18)
	Single father	2.99 (0.23)	3.70 * (0.31)	2.28 * (0.27)
	Other	4.04 (0.30)	3.95 (0.38)	4.13 (0.37)
Neighborhood Context				
Poverty				
	Persons with income below 1989 poverty level	14.49 (0.82)	14.26 (0.82)	14.72 (0.84)
Crime		**Per 100,000 population (SE)**	**Per 100,000 population (SE)**	**Per 100,000 population (SE)**
	Total serious crimes	5595 (241)	5572 (233)	5618 (252)

% (percentage) and SE (standard error) are weighted to be population-based estimates and account for multiple imputation

** designates estimates significantly different for males vs. females (α=0.05)*

TABLE 2—Descriptive Statistics for Adolescent DMST Experience, Gang Membership, Adolescent Violence, and Delinquency

	All (***n=12605***)	**Males** (***n=6071***)	**Females** (***n=6534***)
	% (SE)	**% (SE)**	**% (SE)**
DMST Experiences			
Ever exchanged sex as a minor	3.55 (0.29)	4.85 * (0.41)	2.26 * (0.30)
Adolescent Gang Membership			
Any gang membership	4.66 (0.39)	6.54 * (0.56)	2.80 * (0.33)
Adolescent Violence			
Violence victimization	25.45 (0.94)	35.19 * (1.27)	15.83 * (0.96)
Violence perpetration	13.51 (0.67)	20.15 * (0.97)	6.94 * (0.54)
Adolescent Delinquency			
Score (0–15): *Mean (SE)*	3.73 (0.06)	4.25 * (0.07)	3.22 * (0.06)

% (percentage) and SE (standard error) are weighted to be population-based estimates and account for multiple imputation

** designates estimates significantly different for males vs. females (α=0.05)*

TABLE 3—Percentage of Adolescents Who Experienced DMST Stratified by Their Gang Membership Status, and the Bivariate Odds Ratios and Associated 95% CIs Estimating DMST (*n=12605*)

	No Gang Membership % (SE)	Reported Gang Membership % (SE)	Odds of DMST if member of a gang OR (95% CI)
DMST Experiences			
Ever exchanged sex as a minor			
All respondents	3.11 (0.26)	12.38 (2.00)	4.39 * (3.01, 6.39)
Males	4.23 (0.37)	13.70 (2.39)	3.59 * (2.35, 5.49)
Females	2.06 (0.28)	9.32 (3.12)	4.89 * (2.37, 10.07)

% (percentage) and SE (standard error) are weighted to be population-based estimates and account for multiple imputation

Odds Ratio (OR), 95% Confidence Interval (CI)

**significant OR*

TABLE 4—Adjusted Odds Ratios and Associated 95% CIs Estimating DMST Outcome as a Function of Gang Membership, Demographics, Neighborhood Context, Non-Partner Violence, and Adolescent Delinquency (*n=12,605*)

	Minor Sex Trafficking
	OR (95% CI)
Gang Membership	
Any gang membership	1.84 * (1.16, 2.91)
Adolescent Violence	
Violence victimization†	*Males:* 1.21 (0.83, 1.77)
	Females: 2.54 * (1.35, 4.79)
Violence perpetration	1.30 (0.89, 1.90)
Adolescent Delinquency	
Delinquency Score (0–15)	1.12 * (1.07, 1.17)
Demographics	
Biological sex	
Male	1.00 (ref)
Female	0.44 * (0.31, 0.62)
Race/Ethnicity	
Non-Hispanic White	1.00 (ref)
Hispanic	0.61 (0.35, 1.06)
Non-Hispanic Black	1.59 * (1.15, 2.21)
Other	0.79 (0.44, 1.41)
Age (Wave II)	1.05 (0.94, 1.16)
Highest parental education (SES)	
Less than high school graduation	2.35 * (1.44, 3.84)
High school graduate/GED	2.39 * (1.63, 3.52)

	Minor Sex Trafficking OR (95% CI)
Some college or Vocational education	1.87 * (1.30, 2.69)
College graduate or beyond	1.00 (ref)
Family structure	
Two biological parents	1.00 (ref)
Two parents	0.67 * (0.47, 0.95)
Single mother	0.70 (0.49, 1.01)
Single father	0.88 (0.45, 1.72)
Other	0.96 (0.51, 1.78)
Neighborhood Context	
Poverty	
Proportion of persons with income below 1989 poverty level	2.73 (0.72, 10.39)
Crime	
Total crime rate	1.00 (1.00, 1.00)

Adjusted Odds Ratio (OR), 95% Confidence Interval (CI)

**significant OR; (ref): reference category*

†*Relationship between this independent variable and the dependent variable (Minor Sex Trafficking) differed by biological sex, so distinct ORs are presented for males and females*